

CLAIMS

1. A steel material having a good resistance to corrosion, characterised in that it consists of an alloy containing in % by weight:
- 5 max 0.12 C
 0.5-1.5 N
 12-18 Cr
 max 0.5 Mn
 max 0.5 Ni
- 10 1-5 (Mo + W/2)
 max 1.5 (V + Nb/2 + Ti)
 0.1-0.5 Si
 from traces and up to max 2.0 Co
 from traces and up to max 0.1 S
- 15 balance iron and essentially only impurities at normal contents.
2. A steel material according to claim 1, characterised in that after hardening and tempering, it has a hardness of 58-65 HRC and a microstructure containing 3-6 % by volume of the two hard phases M(N,C) and Cr₂N in a matrix that essentially is
- 20 constituted by tempered nitrogen martensite, which nitrogen martensite comprises 5-20 % residual austenite.
3. A steel material according to claim 1 or 2, characterised in that it contains max 0.11 C, preferably 0.02-0.10 C.
- 25 4. A steel material according to any one of claims 1-3, characterised in that it contains 0.7-1.2, preferably 0.8-1.0 N.
5. A steel material according to any one of claims 1-4, characterised in that it
- 30 contains 12.5-17, preferably 13-16 Cr.
6. A steel material according to any one of claims 1-5, characterised in that it contains max 0.4, preferably max 0.3 Mn.
- 35 7. A steel material according to any one of claims 1-6, characterised in that it contains max 0.4, preferably max 0.3 Ni.

8. A steel material according to any one of claims 1-7, characterised in that it contains 2-4, preferably 2.5-3.5 (Mo + W/2).

9. A steel material according to any one of claims 1-8, characterised in that it contains 0.05-0.3, preferably 0.1 V.

10. A steel material according to any one of claims 1-9, characterised in that it contains 0.3-0.7, preferably 0.5 Nb.

11. A steel material according to any one of claims 2-10, characterised in that it has been hardened by austenitizing at 1000-1200 °C, preferably at 1050-1150 °C and most preferred at 1100-1150 °C, deep cooled at -80 – -200 °C, and thereafter tempered at a temperature of 400-560 °C, preferably at 430-500 °C and most preferred at 460-500 °C.

12. A steel material according to claim 11, characterised in that it has a hardness of 60-64 HRC and most preferred about 62-63 HRC.

13. A steel material according to any one of the preceding claims, characterised in that M in the hard phase M(N,C) essentially contains chromium, niobium, vanadium and molybdenum according to the following composition:

0.66 Cr, 0.27 Nb, 0.07 V + Mo, where the content of V is predominant, and where (N,C) essentially contains nitrogen but also a certain amount of carbon according to the following composition:

0.98 N, 0.02 C.

14. A steel material according to any one of the preceding claims, characterised in that Cr in the hard phase Cr₂N essentially contains chromium, molybdenum, iron and vanadium, according to the following composition:

0.79 Cr, 0.07 Mo, 0.09 Fe and 0.05 V, and where (N,C) essentially contains nitrogen but also a certain amount of carbon according to the following composition:
0.98 N, 0.02 C.

15. A steel material according to claim 1 or any one of claims 3-10, characterised in that it is soft annealed and that in the soft annealed condition it has a hardness of 220-250 HB (Brinell hardness), preferably 230-240 HB.

16. A steel material according to any one of the preceding claims, characterised in that it is a powder metallurgically manufactured material.
17. Use of a steel material according to claim 15, for manufacturing of knives and tools.
- 5 18. Use of a steel material according to claim 15, for manufacturing of machine knives and manual knives for food industry.
- 10 19. Use of a steel material according to claim 15, for manufacturing of plastic moulding tools and injection screws for plastics.
20. Use of a steel material according to claim 15, for manufacturing of tools for cutting paper based laminated products for food and beverages.
- 15 21. Use of a steel material according to claim 15, for manufacturing of ball bearings.